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ABSTRACT

This paper provides an overview of the Waterford Early Reading Program (WERP), which is designed to shift teaching and learning away from remediation and failure to prevention, early achievement, and sustained growth for every student. WERP includes three levels of instruction: emergent, beginning, and fluent readers. It targets pre-K through 3rd-grade students and uses a balanced early-intervention and comprehensive literacy curriculum. The program's primary components include: daily individualized instruction (using highly interactive software); best teaching practices; ongoing assessment (online and off-line); ongoing professional development; school-to-home link; and parent involvement (via Family Literacy Nights). Evidence of effectiveness indicates that adequate time must be available for students to complete the lessons, and that the necessary computer equipment is adequate and well-maintained. Positive effects have been found overall for the program, especially for limited-English-proficient and low-performing students. At the end of 1998, 2,003 schools in 338 districts nationally were using the Waterford Early Reading Program. Sections of the paper discuss background, philosophy and goals, program components, evidence of effectiveness, professional development and support, implementation, costs, considerations, contact information, and policy issues and questions. (SR)

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Waterford Early Reading Program

Background - Philosophy and Goals - Program Components - Evidence of Effectiveness
Professional Development and Support - Implementation - Costs - Considerations
Policy Issues and Questions - Resources

Topic or Category: Reading
Grade Level: Pre-K through 3
Target Population: General, At-Risk, Limited English Proficient students

OVERVIEW

Background and Scope:

The Waterford Early Reading Program (WERP) is designed to shift teaching and learning away from remediation and failure to prevention, early achievement and sustained growth for every student. This model builds from the premise that reading is the fundamental building block for successful learning in all content areas. To address students' diverse needs, the Waterford program combines individualized instruction with classroom instruction, enabling teachers to maximize direct intervention and accurately analyze student needs.

WERP's development began in 1990. The Waterford Institute, an education research organization, worked with several reading experts to develop an online and "off-line" curriculum that teaches skills identified by research as most essential to reading success. Market dissemination of WERP Level One (emergent reading program) was launched in fall 1995. Addison Wesley (now Pearson Education) took over dissemination in April 1996. Market dissemination of WERP Level Two (beginning reading) began in 1997 and WERP Level Three (fluent reading) in 1998.

At the end of 1998, 1,003 schools in 338 districts nationally were using the Waterford Early Reading Program.

Philosophy and Goals:

The primary goal of the Waterford Early Reading Program is to ensure that all children have the necessary instruction to prevent reading difficulties. The theory driving the Waterford model is based on research showing that children who cannot read on grade level at the end of 1st grade rarely catch up -- the achievement gap only widens (Adams, et al., 1990; Snow et al., 1998; Stanovich, 1986). Program developers believe strong reading skills are the key to a child's future success -- not just in school, but throughout his or her life -- and that the most effective way to ensure all children become strong readers is by focusing on early intervention, starting in kindergarten or even preschool. Thus, the Waterford program emphasizes prevention by attacking the literacy gap with intense, individualized instruction using cutting-edge research, technology and best teaching practices across the emergent, beginning and fluent reading continuum.

Program Components:

WERP includes three levels of instruction (emergent, beginning and fluent readers). It targets pre-K through 3rd-grade students and uses a balanced early-intervention and comprehensive literacy curriculum. The program's primary components include the following:
Daily individualized instruction: Highly interactive software tailors instruction to each student's unique needs and learning pace.
Best teaching practices. Teachers are encouraged to implement "best teaching practices" that are

research-based and incorporate a comprehensive literacy curriculum.
Ongoing assessment. Teachers are provided with powerful online and off-line assessment tools and are provided training in how to use this data to direct instruction at every level.
Ongoing professional development. Ongoing professional development and support are provided to help teachers implement the Waterford model.
School-to-home link. Each child is provided with his or her own library of Waterford learning resources to increase communication with parents and help guide parents in supporting their child's literacy development at home.
Parent involvement. Family Literacy Nights are hosted to help parents learn how to be more involved with their children's education at home and as parent volunteers at school.

Three levels of Waterford Early Reading Program:
Level One (emergent literacy) is typically is implemented in pre-K or K.
Level Two (beginning reading) is typically is implemented in 1st grade.
Level Three (fluent readers) typically is implemented in 2nd grade.

Evidence of Effectiveness:

Summary of Evidence:
Several studies have been conducted by independent evaluators and the developer to determine the effectiveness of the Waterford Early Reading Program, and fairly extensive district- and school-level data are available as well. Overall, evaluation results and school data indicate that WERP has a positive impact on student performance. Waterford can be particularly effective with limited-English- proficient students and low performers. Only two Waterford evaluations are listed below; however, the developer has compiled research compendiums for 1999 and 1998 which include extensive evaluations and data.

Discussion of Evidence:
1. *Newark, New Jersey*
Professors at Rutgers University and Kean College of New Jersey conducted a study during the 1997-98 school year to examine the effectiveness of the Waterford Early Reading Program Level 1 in eight kindergarten classrooms in Newark, New Jersey (Yound and Tracey). Students in these eight classes plus seven control classes (a total of 265 students) were pretested in September and October and post-tested in June using the Waterford Reading Inventory (WRI), the Test of Early Reading Ability-2 (TERA-2) and the Lindamood Auditory Conceptualization Test.

The evaluation found that students in the experimental classes outperformed students in the control classes on all three of the assessment measures used. Significant results favoring the experimental group were found using the WRI and the TERA-2. Nonsignificant results favoring the Waterford students were found using the Lindamood test. The researchers believe the Lindamood test was inappropriate for the study because of its inability to discriminate among the lower-performing students. Highly significant differences were found in favor of the Waterford students' gain scores in comparison to the control group ($p<.001$). Significant differences were found in favor of the Waterford students on the TERA-2 as well ($p<.02$). Results of the WRI and TERA-2 are listed on the following chart. Seventy-six Waterford students and 55 control students took the WRI; 74 Waterford students and 60 control students took the TERA-2. An NCE (normal curve equivalent) of 50 indicates the national average.

Waterford and Control-Group Comparisons on the Waterford Reading Inventory (WRI) and the Test of Early Reading Ability-2 (TERA-2)
Newark, New Jersey 1997-98

	WRI Pretest Mean Scores (points)	WRI Post-test Mean Scores (points)	WRI Mean Gain Scores (points)	TERA-2 Pretest Mean Scores (NCEs)	TERA-2 Post-test Mean Scores (NCEs)	TERA-2 Mean Gain Scores (NCEs)
Waterford Students	21.99	75.46	59.13	29.70	54.85	26.50
Control-Group Students	27.78	81.12	47.68	37.23	56.19	17.62

2. *Dallas Independent School District, Texas*
An independent evaluator studied the effectiveness of the Waterford Early Reading Program for the Dallas Independent School District's Department of Accountability and Information Systems. WERP, Levels 1 and 2, was implemented in three school in 1997-98. A total of 527 students, including 272 kindergartners and 255 1st graders, participated in the study (Shapely, 1998). Students were tested in spring 1996 (kindergarten only), 1997 and 1998 using the Iowa Test of Basic Skills (ITBS). ITBS subtest scores for vocabulary and word analysis (kindergarten) and reading comprehension (1st grade) were used to determine outcomes. District scores were used as a comparison.

Kindergarten Results:
ITBS vocabulary outcomes for the three schools combined were mixed. NCE losses were evident for Year One (-2.8), but large gains were made in Year Two (13.4). Word-analysis results were more consistent, with an NCE gain of 4.8 in Year One and 6.4 in Year Two. Typically, a gain of two to three NCEs is considered little growth, four to nine would indicate average gains, and greater than 10 would be good growth. Of note, Robert Elementary, which has a limited-English-proficiency kindergarten population of 80% and a low-income population of 93%, made the most significant gains over the course of two years. Between the benchmark year and Year One, the school experienced an NCE loss of 15 on vocabulary and 10.2 on word analysis. Between Year One and Year Two, however, it showed a NCE gain of 37 on vocabulary and 17.9 on word analysis.

Mean ITBS NCE Kindergarten Results for the Waterford Early Reading Program, Level 1

	Benchmark year (1996)	**Year 1** (1997)	**Change**	**Year 2** (1998)	**Change**
Vocabulary					
Waterford Students	54.3	51.5	-2.8	64.9	13.4
District	51.3	53.1	1.8	52.4	-.07
Word Analysis					
Waterford Students	48.5	53.3	4.8	59.7	6.4
District	52.3	53.1	.8	53.5	.4

First-Grade Results:
First-grade comparisons show positive ITBS NCE reading comprehension gains (4.8) for students in Waterford schools. Performance gains varied dramatically across the three schools: Cabell (6.9), McNair (1.2) and Roberts (21.4). District-level comparisons showed that Waterford 1st-grade NCE gains (4.8) exceeded district gains (0.8).

Professional Development and Support:

Implementation of the Waterford program is supported through ongoing professional development. Prior to implementation, all participating teachers and staff attend a full-day training program that teaches them how to use the software, how to integrate the online instruction into the classroom using the

"off-line" materials, and how to use and maintain the hardware in their classrooms. During year one, three additional, individualized training visits focus on the following issues:
Implementation status
Implementation suggestions based on direct classroom observations
Teacher options/customizing online instruction.

In years two and three, two training sessions occur. Retraining or training new staff occurs during the first visit. The second visit often focuses the following issues, and can be requested during year one:
Use of teacher resources
Coaching and modeling program use
Running end-of-year reports
Summer school usage.

Additionally, staff development is offered in the following areas for an additional fee:
Waterford correlation to state reading standards
Effective use of comprehension strategies taught in the Waterford curriculum
Effective use of supplementary Waterford materials
Incorporating phonemic awareness and phonics using Waterford materials
Basic troubleshooting with Waterford
Using Waterford supplemental materials for remediation
Making and taking Waterford materials workshops.

Individual Waterford sites can request the above training in year one. The Waterford model also includes on-demand staff development resources such as online tutorials for the Waterford software and a videotaped training session for hardware setup and maintenance.

Electronic Education, a division of Pearson Education and sole distributor of the Waterford Early Reading Program, supports a toll-free technical support hotline and Web site. Field-support technicians and trainers also are available to work with schools on site to ensure effective implementation. Additionally, the Waterford Institute maintains a toll-free phone line and offers evaluation support.

Implementation:

Implementing the Waterford Program requires installing one to four multimedia computers networked to a high-speed laser printer in each classroom. This equipment runs the year-long online curriculum. Every student in the participating classrooms uses the program for 15-30 minutes of daily individualized instruction in essential literacy skills. This individualized component is coordinated with a comprehensive language arts curriculum employing best teaching practices based on the latest research in reading. Teachers receive ongoing professional development in implementing both components, including using the new technology and the curricular resources of the off-line Waterford Teacher Resource Center. Professional development also supports teachers in using the student materials to create a strong home-school link and foster parent involvement.

In general, implementation of the Waterford Early Reading Program does not require any pre-existing conditions, except a strong commitment to improving student achievement. Though the individualized instruction component is implemented using computers, Waterford trainers ensure that all teachers are comfortable and confident in using this technology prior to completion of the initial training.

Electronic Education provides opportunities for all those involved to view and discuss the program prior to implementation. This process helps build support for the program as all participants learn about the program's model, goals and instructional design, although no formal buy-in process is required. Waterford strongly encourages schools to implement all three program levels to achieve the goal of fluent reading by the end of 2nd grade, but does not require multi-year commitments. Schools are required, however, to meet certain hardware system requirements to use the Waterford model's technology.

Costs:

Several implementation options exist for the Waterford Early Reading Program, and total costs vary based on the following factors:
Number of grade levels purchased (K-2)
Staff development needs
Total number of students served per year
Total number of classrooms or schools served
Hardware configuration selected (number of computer stations, platform and networking options, etc.)
Length of contract for replenishment of materials (in years).

Waterford representatives meet with school- and district-level educators to identify the implementation model that best fits each school's instructional and technical needs. The most common model is a center of three computers in a single kindergarten classroom. Cost for the software, training and a three-year supply of materials for this set up is $19,000 (for a complete list of materials included with purchase, see Teacher and Student Materials section). For 90 students served over the three-year period, the average cost equals $211 per child.

Considerations:

Districts and schools need to ensure that adequate time is available for students to complete the lessons and that the computer equipment is adequate and well-maintained. This is especially important since one study, not mentioned in the Evidence of Effectiveness section, showed that the more time students used the WERP program, the greater the gains. Overall, the evaluations of the Waterford Early Reading Program indicated positive effects on student reading performance, especially for limited-English-proficient and low-performing students.

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Policy Issues and Questions:
How can states help districts and schools choose the most appropriate reading programs to improve students' skills and performance? What information and assistance would be useful?
Should states promote particular reading programs for districts and schools to use?
How can a reading program's track record be checked and validated?
What criteria should states and districts use to invest in various reading programs initially and for the long term?
How should policymakers weigh the benefits of a reading program versus its cost and required resources?
Can a balance be struck between effectiveness and efficiency?
What state policies can help improve teacher training and professional development so teachers are better equipped to help all students read successfully?

Resources:
Shapely, Kelly S. (1998, August). *Evaluation of the 1997-98 Waterford Early Reading Program.* Dallas, TX: Dallas Independent School District Department of Accountability and Information Services. Report #REIS98-3236-2.

Young, John W., and Tracey, Diane H. (1998). *An Evaluation of the Waterford Early Reading Program: Newark, New Jersey, 1997-98 School Year.* Sandy, UT: Reprinted with permission by the Waterford

Institute.

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